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Expert Group Meeting on measures and forms in promoting integrated development of the vegetable oils and fats industry within the food-processing industry

Alexandria, Egypt, 24-27 October 1983

REPORT *

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PREFACE

The Second General Conference of the United Nations Industrial Development Organization (UNIDO), held at Lima in 1975, declared that the share of developing countries in world industrial production should be increased to the maximum possible extent and as far as possible, to at least 25 per cent by the year 2000. In order to facilitate the achievement of this target, the Lima Conference, inter alia, assigned UNIDO the responsibility of organizing continuing consultations in the field of industry at global, regional and sectoral levels.

One of the priority sectors mentioned in the Lima Declaration and Plan of Action is the development of efficient agro-industries and stimulating food production activities by securing an effective and viable link between agriculture and industry with the objective of achieving a high degree of integration and interaction between these two sectors of the economy in the developing countries.

In order to stimulate further development of the food-processing and the vegetable oils and fats industries, the First Consultation on the Vegetable Oils and Fats Industry was held in Madrid in 1977 and the First Consultation on the Food-Processing Industry was held in The Hague in 1981.

Taking into account the recommendations adopted at the First Consultations on the Vegetable Oils and Fats 1/ and the Food-Processing Industries, 2/ the Industrial Development Board, at its seventeenth session, decided that the Second Consultation on Food Processing with special emphasis on vegetable oils and fats should be held in the biennium 1984-1985. According to the UNIDO work programme, this Consultation is scheduled to be convened from 15 to 19 October 1984.

Based on the current evaluation of the production and market situation for the vegetable oils and fats industry, the UNIDO inter-divisional Task Force on the Food Processing and Leather and Leather Products Industries, has identified two main problem areas as possible issues for consideration by the Consultation. They include the various aspects of the integrated approach in vegetable oils and fats industry development within the food-processing sector, and measures to overcome machinery and spare parts shortages in the food-processing industry, illustrated by example of the vegetable oils and fats industry.

1/ Report of the First Consultation on the Vegetable Oils and Fats Industry (ID/WG.260/9).

2/ Report of the First Consultation on the Food-Processing Industry (ID/278).

The Expert Group Meeting on "Measures and forms in promoting integrated development of the vegetable oils and fats industry within the food-processing industry" was convened by UNIDO in co-operation with the Government of the Arab Republic of Egypt in Alexandria from 24 to 27 October 1983 as a preparatory meeting to the Second Consultation.

The main objectives of the Alexandria meeting were to estimate whether the problem area related to the integrated approach in vegetable oils and fats industry development is justified to be included as one of the main issues for consideration by the Second Consultation, and to advise UNIDO on the selection of priority issues within this identified problem area.

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I. ORGANIZATION AND ATTENDANCE

1. The meeting was opened by the General Secretary of the Alexandria Governate, Mr. Hamdy Abd El Mohsen, and the Under-Secretary for Industry and Mineral Resources of the Arab Republic of Egypt, Mr. Ragae El Haddy, delivered the welcoming speech. On behalf of UNIDO, Mr. Horst Koenig, Head of the UNIDO delegation, presented the objectives of the meeting, and Mr. Grzegorz Donocik briefly outlined the activities of UNIDO within the framework of the System of Consultations.

2. The meeting was attended by experts (acting in their individual capacity) from Brazil, Canada, France, Federal Republic of Germany, India, Nigeria, Poland, Sri Lanka, Sudan, Syrian Arab Republic, Switzerland, United Kingdom, United Republic of Tanzania, United States of America, Yugoslavia and Egypt.

3. The United Nations Industrial Development Organization (UNIDO) (Sponsoring Agency), the Food and Agriculture Organization of the United Nations (FAO), and the International ..... Trade Centre (ITC) were also represented. 3/

4. The meeting elected Mr. Ali Abdel Rahman Amin (Egypt) as Chairman, and Mr. Murugesue Varnakulasingam (Sri Lanka) as Rapporteur, and adopted the attached ..... agenda. 4/

II. SUMMARY OF THE PROCEEDINGS

5. Five discussion and position papers, prepared by the UNIDO secretariat and its consultants, and eleven papers prepared by invited experts, FAO and Egyptian ..... representatives, were submitted to the meeting as supporting material. 5/

6. The meeting critically reviewed the issues highlighted in the above reports and adopted the following observations, conclusions and recommendations:

Issue No. 1: Justification for selecting the integrated approach in developing the vegetable oils and fats industry

7. The importance of integrated development of vegetable oils and fats is justified by:

3/ See Annex 1 for List of Participants.
4/ See Annex 2 for Agenda.
5/ See Annex 3 for List of References.

(a) The need to avoid bottlenecks in various elements of the vegetable oils and fats system which reduce the overall efficiency and output of the vegetable oils and fats industry.

(b) The possibility it offers for the creation of an important technological and economic line by the natural properties of oil-seeds resulting in different uses of oil-seed processing products. Integrated development of vegetable oils and fats should be substantiated by the selection, elaboration and implementation of a "cluster of projects" linked to oil crop processing thus contributing to the creation of a dense industrial issue and to the growth of complementarities within industry and other sectors of economy.

8. The experience of some of the developing countries indicates the economic viability of the integrated development of vegetable oils and fats and their by- and co-products. In the past, agricultural production of oil-seeds in the developing countries has been developed mainly as a source of raw materials for the crushing plants in the developed countries. This traditional market continues to exist and attempts made by some developing countries to move away from this traditional market have been found unsuccessful and in few instances the rate of market growth within the producing region has been very slow.

9. For the successful integration of the vegetable fats and oils industry there should be a well defined and sound government policy on production, processing and marketing. Since integration of the industry is a complex task and presents serious problems, it needs careful planning and co-ordination of activities by government organs and industrial enterprises involved therein.

10. Existing constraints in the majority of developing countries substantially hinder the development of the vegetable oils and fats industry and do not allow for the full utilization of the already installed production capacity. The integrated approach is proposed as a way for gradual overcoming these constraints. The identified constraints could be summarized as follows:

(a) Insufficient supply of raw materials due to various reasons which include drought, floods, pest and disease; lack of adequate incentives for farmers to grow vegetable oil-seeds;

(b) Limited market for further processed oil-seeds and oil products and their co- and by-products;

(c) Lack of co-ordination among the various bodies or departments responsible for production, processing and marketing;

(d) Some of the technologies used in the developing countries are alien to the practical realities and socio-economic conditions;

(e) Limited number or lack of co-operatives and associations for the vegetable oils and fats industry and failure to establish a network of collection centres for the raw materials from the farmers and delivery to the processing plants;

(f) Poorly developed infrastructure;

(g) Permanent shortages of spare parts in processing plants;

(h) Acute shortage of skilled manpower.

Conclusions and Recommendations on Issue No. 1

11. The Meeting agreed on the following conclusions and recommendations on Issue No. 1:

Conclusions

(a) Integration, both vertically and horizontally, is possible if the market for products is assured for domestic consumption and exports and possibilities for supply of raw material exist. Some participants felt that integration at an international level would be desirable.

(b) For proper integration, there should be a clear and consistent national government policy on production, processing and marketing of vegetable oil-seeds and oil products.

(c) Case studies illustrating the integrated approach for development of the vegetable oils and fats industry, based on selected individual oil-seeds, should be prepared by the UNIDO secretariat for the Second Consultation and be available to interested governments, similar to the case study presented to the meeting by the expert from Brazil. The experience of the developed countries which are far more advanced in the application of the integrated approach should be taken into account.

(d) Particularly for developing countries which are in advanced or partially developed stages of industrial development, the vegetable oils and fats industry should be integrated as far as possible into the already integrated vegetable oils and fats industry and other food-processing and manufacturing industries.

(e) Developing countries, which are in the early stages of vegetable oil industry development, need to seek collaboration from foreign developed or developing countries in the field of technology, management, organizational structures, etc. to integrate their industry.

Recommendations

(a) Integrated development has to be based on the results of techno-economic feasibility studies to be conducted either on an individual country basis or on a sub-regional basis.

(b) Government policies should be directed towards further strengthening the co-ordination of activities of the three major sectors of the vegetable fats and oils industry, namely: production, processing and marketing.

(c) The Governments of developing countries may wish to consider steps that will lead to the positively accelerated development of the vegetable oils and fats industry on an integrated basis. The first and obvious step is for the governments to determine the types of industries to be set up by public and private sectors, which have inherent advantages and which can be established with the most benefit to individual government's economy.

Issue No. 2: Vertical integration, link among production, processing and marketing

12. The following observations were made:

Due to lack of co-ordination among the three major sectors of the vegetable oils and fats industry, there was a recurring shortage of raw materials for the processing industry resulting in the under-utilization of installed capacities and a shortage of fats and oils for consumption in the edible and industrial sector. The main reasons for the shortage of raw materials are as follows:

(a) Interest of the government generally favoured the consumers rather than the primary producers.

(b) Majority of the farmers or producers of vegetable oilseeds in the developing countries are small holders. They need constant support from government or other forms of support for their farm inputs, such as high yielding varieties, fertilizers, extension service, finance and ready market for their product.

(c) Due to lack of infrastructure and high transportation costs to processing centres to sell their produce, farmers think twice before cultivating oil-bearing seeds.

13. In countries where co-operatives or associations for vegetable oils and fats industry exist, links among the three major sectors of the industry were successfully

established. The farmers generally obtain better prices for their produce, through setting up group processing plants and better quality products.

14. In many countries, linkage among the major sectors have been overcome by setting up national boards or agencies for the integrated development of the vegetable oils and fats industry. The main function of the board is to ensure that production, processing and marketing are synchronized and to ensure that there is a steady income to the producers or farmers. Farmers' incomes are stabilized through setting-up a stabilization fund. When the world market price for the vegetable oil-seeds are higher than the board guaranteed price, the excess goes into the stabilization fund. When the world market is low, the price difference (between low world market price and guaranteed price) is subsidized from the stabilization fund.

Conclusions and Recommendations on Issue No. 2

15. The agreed conclusions and recommendations are as follows:

Conclusions

(a) The required links between production, processing and marketing can be established through setting up co-operatives or agro-industrial complexes, when farmers are directly involved in production, processing and marketing.

(b) Similar links can be established through national boards (autonomous bodies) set up to co-ordinate the activities of production, processing and marketing. In many cases steady income to farmers could be assured through government subsidy and income assurance.

(c) Contractual agreements between farmers and manufacturers or retailers deserve to be promoted as alternative to co-operatives (or market boards) and may be preferred in developing countries where the farm structure is stronger.

Recommendations

(a) The government should encourage the establishment of integrated farmers' co-operatives within a sound and co-operative spirit, wherever possible.

(b) If socio-economic conditions permit, the agro-industrial complexes should be considered as one of the efficient methods of integrated industrial development.

(c) Support from government to private sector, particularly to small-holder farmers is recommended through, among others, the establishment of national boards with representatives from various ministries for establishing links between three major sectors: production, processing and marketing.

(d) When establishing the integrated system for vegetable oils and fats development, governments should define the financial help (extent and type) which can be considered reasonably justified to support the normal performance of the agro-industrial structure, based on oil-bearing seeds.

Issue No. 3: Horizontal integration and required inputs to integrated development

16. In discussing the horizontal integration of the vegetable oils and fats industry, the meeting stressed the importance of training, quality standards, extension services, technology, energy, subordinate materials, etc. in the integration of vegetable oils and fats industry. The meeting made the following observations:

(a) Training

Attention has been focused in recent years on the lack of trained man-power, particularly at the skilled labour level or mid-technicians' level. International technical assistance thus has played and will continue to play an important role in alleviating the basic shortages in developing countries.

(b) Quality standards

Some participants felt that their country is finding it extremely difficult to achieve the international standards set for vegetable fats and oils, oil-seeds and other oil-seed products.

(c) Extension services

For the successful implementation of the integrated approach to vegetable fats and oils industry's development, the importance of having an experienced and competent extension services team was stressed.

(d) Infrastructure

For the rapid development of the integrated approach to the fats and oils industry development, infrastructure in the developing countries should be improved.

(e) Scale of production and appropriate technology

The meeting stressed the importance of an adequate scale of production and appropriate technology for the successful integration of the vegetable oils and fats industries.

(f) Energy

Economizing of energy requires particular attention when the integrated development approach is implemented.

(g) Subordinate materials

Up-to-date experience has shown that the supply of an overwhelming majority of subordinate materials from outside sources to processing plants is generally economically justified.

Conclusions and Recommendations on Issue No. 3

17. The meeting agreed on the following conclusions and recommendations on Issue No. 3:

Conclusions

(a) Training

(i) Priority should be given to "in-plant training" in developing countries rather than training abroad.

(ii) It is suggested that the government authorities should be very careful in selecting the personnel for training. Besides possessing the requisite qualifications the persons selected should have an aptitude for chemical and mechanical type of work and be able to withstand the hard and tough work in factory operations.

(b) Quality standards

Developing countries should have their quality standards according to the following guidelines:

(i) For export/import products they should comply with internationally accepted quality standards.

(ii) For domestic markets some allowance in relation to international standards may be tolerated due to local conditions - however, with the endeavour to reach international standards as soon as possible.

(c) Extension services

Extension services are to be provided to all aspects of the integrated vegetable oils and fats industry by suitable institutions to be designated or established.

(d) Infrastructure

Priority should be given in the national development programmes for the improvement of the infrastructure to facilitate development of the integrated vegetable oils and fats industry.

(e) Scale of production and appropriate technology

Techno-economic feasibility studies should be the decisive factor for the final decision to determine the scale of production and appropriate technology.

(f) Energy

Considerable energy savings could be obtained by widely utilizing factory waste products such as oil-seeds husks, shells, hulls, etc.

(g) Subordinate materials

(i) The essential criterium for producing or purchasing subordinate materials needed for processing oil-seeds and vegetable oils - such as necessary chemicals, should be based on economic feasibility studies.

(ii) Fabrication of metal cans, plastic bottles and other packaging materials can be manufactured by the relevant production units attached to the vegetable oils and fats factories, where economic conditions permit.

(h) Environment

Avoidance of environmental pollution should deserve special attention. To this end the widely introduced recirculation of water systems and water treatment should be taken into account. It is technologically possible to utilize waste materials obtained from effluent water in the production of valuable market goods such as soap, fatty acids, etc.

Recommendations

18. It is recommended that a team of experts should review and assess the type and nature of training, extension services, infrastructure, etc., in selected developing countries to finalize their requirements prior to the implementation of the programme for the rapid development of the integrated vegetable oils and fats industries.

Issue No. 4: Impact of international co-operation on integrated development of the vegetable oils and fats industry

19. International co-operation can contribute positively to accelerating integrated development of the vegetable oils and fats industry, through reinforcing internal activities by experiences and achievements obtained abroad in the field of technology, research, training, planing and management. This type of international co-operation will play a supporting role in implementing the integrated development approach within the specific developing country.

20. International co-operation can also lead directly to bilateral and trilateral integration in the area of vegetable oil and fats industry, provided the political will of the countries concerned is expressed and economic comparative advantages from such integration proven. This type of international (sub-regional) co-operation would constitute a direct part of the integrated process, based on mutually beneficial division of labour, advantages of extended local markets and increased raw material resources.

21. The meeting took note of several cases showing international co-operation in view of implementing integration in the oils and fats industries development sector, namely:

(a) Co-operation between New Zealand and the Philippines in the establishment of coconut by-product utilization facilities.

(b) Co-operation between the USA and Taiwan, Indonesia, South Korea, and Brazil in the soya bean production and processing sector.

(c) Co-operation between Malaysia and India as well as Bangladesh in the field of oil palm cultivation and palm fruit processing.

22. The meeting emphasized the usefulness of joint ventures to be set up between private industries of developed and developing countries. In this connection, it was pointed out that the governments should create a climate for joint ventures.

23. The meeting stressed the important influence of the existing regional and sub-regional bodies on the promotion and initiation of integrated vegetable oils and fats industry development. Such bodies in particular as the Asian and Pacific Coconut Community and the African Groundnut Council.

24. The meeting generally agreed that the lack of valid data and statistical information in many developing countries handicap appropriate decision making in view of integration action to be taken in the oils and fats industries development sector.

25. The meeting stressed the need for the further development of international trade between developed and developing countries and among developing countries in vegetable oils and fats and oil-seed products.

Conclusions

(a) To strengthen the existing international technical co-operation between developing and developed countries and among developing countries in the establishment of integrated vegetable fats and oils industry. UNIDO should continue to act as a catalyst to bring about closer dialogue between the interested parties for acquisition of technology, training, marketing, management, etc.

(b) Priority should be given to collection and compiling of data relevant to the establishment of integrated oils and fats industries in developing countries as the basis for decision making.

(c) Priority should be given to the development of the international trade on oil-seed products which is an important part of international co-operation for the implementation of the integrated vegetable oils and fats industry approach.

III. SUMMARY OF DISCUSSIONS

26. The discussion paper was presented briefly and was followed immediately by papers principally concerned with the situation of the oils and fats industry in many African countries including one which dealt with the choices now facing Egypt, the host country.

27. One expert explained how FAO saw it as their task to promote integration in the important part of the agro-industry within their concern. He referred to actions listed in his paper which, it was felt, would advance this task.

28. A member of the UNIDO secretariat then gave reasons why various statistics had been included in the papers circulated by them, since from these it was apparent that the overall advances made during the last decade in the oil and fats industry of developing countries in fact depended upon substantial improvement in relatively few countries whilst many others showed little change or had even declined. It was particularly important to arrest this decline and integration, sometimes sub-divided into categories described as vertical and horizontal respectively, seen as the most powerful means to reverse this declining trend.

29. One participant pointed out that Egypt's production of edible oils extracted from local seeds is insufficient, necessitating imports of semi-refined edible oils.

30. With regard to overcoming insufficient raw material supply, three policies were indicated:

(a) Continuation of importation of semi-refined oils to be fully refined locally;

(b) Importation of oil-seeds to be crushed for extraction of oil;

(c) Growing of oil-seed producing crops on a wider scale as an alternative to the importation of oil-seed or vegetable oil from abroad.

31. The benefits of importing oil-seeds by Egypt, compared to importing semi-refined oils, result from saving cost, profits and added value and saving transportation costs.

32. From the discussions which followed, it was apparent that different oil-seed crops offered varied opportunities for both technical and commercial integration, and as a consequence, the situation in each country had to be treated in accordance with the special features which existed there.

33. At the same time, one expert stressed the advantages of publishing a general review (case studies) illustrating the degree of integration open to each important oil-seed crop in order that governments and industry in developing countries see more clearly the opportunities which are available to them. The review should not only consider qualitative differences in the potential for integration existing in different types of oil-seed but also any restrictions arising from small-scale operations.

34. It was recognized that considerable unused processing capacity already existed in many developing countries. One representative felt that, within a limit extending in the extreme to only 50% utilization at times, this did not entail too severe a financial burden in servicing the debt of original capital expenditure.

35. The oil and fats industry must not be integrated merely within itself, as it would cause isolation, but as part of the larger food industry and even in the chemical industry as far as detergents and oleo-chemicals in general were concerned.

36. One expert reminded the meeting that marketing was of vital importance. This aspect, which had all too often been neglected in the past development of national oil and fats industries, was now recognized as an essential primary study when considering the establishment or extension of any industry. A feature of the marketing situation which had to be recognized was the purchasing power of the potential customers.

37. Another expert stressed that an effective integration plan must also take into consideration the various elements for achieving the desired socio-economic development objectives making the most efficient use of resources available in a particular country. With full integration all links in the chain are stronger and secure. Integration may begin with the farmer and extend the various levels of government and financial centres of the world. This leads to more personal security and wealth, more mechanization, higher incomes with improved nutrition and an increased need for consumer goods, i.e. socio-economic situation.

38. The extent to which integration had played an important part in the development of the soya bean agro-industry of Brazil was described. More and more processing units were dependent upon the economy of scale. Plants handling less than 1000 tons of bean per day were decreasing in number.

39. The Brazilian experience had succeeded and could overcome the problem of by-product of soya bean processing since the use of soap stock by-product is not economic compared to the low quantity of soap stock with the big mass of tallow available.

40. Concerning lecithin processing some developments have been undertaken to produce specific lecithin for certain purposes. The Brazilian mistakes were raised as well; these were expressed in the high crushing capacity compared to the low production of raw material.

41. Government policies in Brazil tried to set up a link between agricultural exportation and processing. A good example of horizontal integrated development is the diversified application of proteins extracted meals in other food products.

42. The role played by co-operatives in Brazil in increasing production of soya beans was presented. The role of the Brazilian Government was also highlighted as regards the subsidy granted to agriculture and export.

43. One expert confirmed that very large soya bean processing plants had become a normal feature in his country. The USA was fortunate in having a highly developed and sophisticated infrastructure (especially communications) which made this possible. The industry in the USA was fully prepared to ship beans to countries which sought to maintain their processing as far as possible within their own resources. In summing up his view on integration, the expert pointed out that each country must define integrated development of the oil-seed industry on the basis of its specific need. This need will determine the oil-seed component required, and in turn if it can be processed or utilized in the country. This situation suggests the sharing of responsibility among the countries concerned.

44. Another expert also pointed out that it was highly unrealistic for developing countries to aspire to this economy of scale since their infrastructure was not so highly developed.

45. One of the questions raised was government financial assistance to an oil and fats industry in the early stages of its development which appeared to be a common practice.

46. The problem of integration in the opinion of another expert is the co-ordination between the different parties concerned, who are responsible for production, processing and marketing. He presented a brief outline of the Government of Canada's support of agricultural production as follows:

(a) Assuring continuity of production;
(b) Assuring reasonable prices to farmers;
(c) Sharing the risk of production;
(d) Maintaining a consistent supply of quality produce;
(e) Assisting in production efficiency;
(f) Increasing productivity.

47. The Canadian Government, in conjunction with the farmers, operates a number of farming insurances which gave the farmer a considerable sense of security and protection against sudden falls in market prices or poor yields due to pests, variation in climate, etc.

48. Another form of assistance to farmers in Canada is the provision of information or training frequently carried out under extension schemes. This scheme operates in many countries and had achieved numerous successes. In several countries of which Venezuela, the Philippines and Malaysia provided examples, farmers were shareholders in the factories they supplied.

49. Two experts indicated that a policy of joint integration of agricultural supplies was about to operate in Egypt and Sudan. This policy is to suffice the major needs of the two countries especially in food security, combining their capacities for the production of raw materials and technical experience.

50. One of the experts pointed out that it is impossible to separate vertical and horizontal integration, since both types are interrelated. The main points of integration are: common interest, common risk, common participation in income through production, common research and financing of such reasearch.

51. It was explained that in Yugoslavia a great many farmers were members of agro-industry complexes the essential feature for the success of which lay in the recognition by the members that their mutual prosperity rested upon their will to co-operate. Farmers who were not full members of the complex could still derive advantages from it by purchasing their equipment and supplies through it. Internal charges for services to members were fixed within the complex. The Government regulated prices of products sold, provided a minimum quality standard was met, with a bonus for superior quality and a penalty for lower quality according to a fixed scale.

52. Another expert stated that the Egyptian farmer co-operated best with nationalized agencies when he became convinced they were genuinely working for his personal benefit.

53. Training of a country's own technicians instead of relying upon the ones coming from abroad was generally accepted as very desirable, and discussions then centered on the ways training could best be given.

54. Management trainees attended courses abroad in many cases; large plants in developed countries were prepared to give training as regards their speciality to both engineering technicians and plant operators who ought to have the necessary standard of basic education to enable them to benefit from the instruction.

55. On the economic side, ITC ran highly developed courses, based in Geneva, on marketing, trade documentation, market research and related topics with practical studies in other European countries. Unfortunately, countries outside of Europe commonly sent students who were not the best suited for such training.

56. Another expert emphasized the great importance of senior management in developing countries interesting themselves actively in the selection of trainees at all levels to ensure they represented adequate material. It was also pointed out to the meeting that in Asia there exists a good level of trained technicians in the private sector as people trained abroad would often leave the public sector for the private one because the pay was higher.

57. One expert added that the availability of a trained technical force is one of the greatest problems in developing countries. One of the most important tasks of UNIDO should be to organize technical assistance in various developing countries. This should not be in the form of a research centre or an oil chemical laboratory but in form of workshops where the young engineers learn how to handle, dismantle and

repair a pump, how to assure good vacuum, what to do with a centrifuge, how to assemble a product or steam or water line. Such a technical school is the basis of industrialization, and if UNIDO could help to establish these in co-operation with developing countries it would be achieving a very important aim.

58. During the discussion on analytical standards of quality and standards for performance the point was made that in the latter it remained just as important to specify the conditions of test if results were to be meaningful and comparable. National standards should be set and met as a preliminary to meeting international standards which might well be rather higher.

59. Concerning a so-called "ideal" size for process plants it was accepted this must to a considerable extent be determined by the environment and local conditions.

60. As infrastructure improved, so could more plants, or larger plants become feasible; an improvement in infrastructure e.g. in communications, could easily be more helpful to an industry than additional process equipment.

61. In any case the task very often is to improve and integrate plants in an existing industry and not to erect a new industry. Also integration of operation between old and modern units could be achieved without great trouble although obviously the supply of spares for machines or containers to packing machines must be compatible.

62. Four experts gave instances of fuel saving by using factory waste such as sunflower seed husks to heat boilers. Capital expenditure is high but so are the savings, so that a payback time in two years is likely. Another expert suggested that energy economizing should in future be included as an essential part of any horizontal integration.

63. As a feature of so-called horizontal integration it was frequently found advantageous for a factory to fabricate its cans from flat steel plate stored on the premises.

64. As regards cleansing of effluent water from untis such as an edible oil refinery the final purification stage employed by a number of factories included some species of plant life which thrived in the effluent stream from which they observed impurities via their own metabolism.

65. In general it was proposed that one of three conditions was required from horizontal integration - it should be profitable or help increase living standards or save foreign exchange or some combination of these.

66. International co-operation in the first instance may mean helping a country to understand the benefits which integration can bring, then how integration can be put into effect in its own industry.

67. The co-operation between Egypt and the Sudan was quoted as an example within the agro-industry business.

68. One expert gave further examples of various kinds and another expert pointed out that the considerable trade in oils and fats and meal amounted to international co-operation.

69. Many developing countries did not have the present infrastructure or any prospect of sufficient natural resources to supply all their own requirements in oils and fats. They must therefore face the indefinite prospect of obtaining at least an important part of these requirements by trading in commodities falling within the competence of their own industry.

70. It was pointed out that the complex problem of chosing which resources to exploit so as to obtain the maximum overall advantage was now being solved in some instances by the use of systems analysis and computer.

71. There seemed in many cases a better prospect of obtaining at least bilateral co-operation in the private sector where two companies perceived a mutual benefit (profit) from so doing.

72. UNIDO and indeed all other international agencies were only authorized and able to help bring about international co-operation. The will to co-operate must exist in the first place in the countries concerned.

Annex 1

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Annex 2

AGENDA OF MEETING

1. Justification for selection of the integrated approach in developing the vegetable oils and fats industry

2. "Vertical" integrated development - promotional measures

3. "Horizontal" integrated development - promotional measures

4. Possible forms of integrated development

5. Impact of international co-operation on integrated development of the vegetable oils and fats industry

6. Proposals for action required for implementing integrated development

Egyptian vegetable oils factories visited by participants of the meeting

1. Kafre el Zayat Plant

   (Cottonseed processing plant, production of oilmeal, soap, detergents)

2. Salt and Soda Company in Alexandria

   (Leading company in the Middle East for the extraction, refining and bottling of edible oils, production of ghee, animal feed, laundry and toilet soap, etc.)

Annex 3

LIST OF REFERENCES

A. Papers submitted by UNIDO

1. Integrated food-processing industry development in Africa: Constraints and promotional measures, prepared by A.C. Mosha, UNIDO consultant, document ID/WG.404/1

2. Vegetable oils and fats industries in developing countries: Constraints and promotion of integrated development, prepared by A.C. Mosha, UNIDO consultant, document ID/WG.404/2

3. Production and market situation for the food-processing industry with special emphasis on vegetable oils and fats, prepared by the UNIDO secretariat, Negotiations Branch, document ID/WG.404/3

4. Measures and forms to promote integrated development of the vegetable oils and fats industry within the food-processing industry, discussion paper, prepared by H.B.W. Patterson, UNIDO consultant, document ID/WG.404/4

5. Elements for discussion on the measures and forms to promote integrated development of the vegetable oils and fats industry, issue paper, prepared by the UNIDO secretariat, Negotiations Branch

B. Papers presented by host country, FAO and invited experts

6. Edible Oils Industry in the Arab Republic of Egypt, presented by Ali Amin, Chairman of the Salt and Soda Company in Alexandria, Egypt

7. The Egyptian Salt and Soda Company, presented by Ali Amin, Chairman of the Salt and Soda Company in Alexandria, Egypt

8. Integrated approach to the development of the vegetable oils and fats industry within the food-processing industry, discussion paper, presented by H.N. Daoud, Regional Agro-Industries Officer for the Near East, FAO

9. Discussion paper presented by Anant Gunjal (India)

10. Defining integrated development of the oil-seed industry, discussion paper, prepared by Gil Griffis (USA)

11. Some considerations on the integrated development of the vegetable oils and fats industry, prepared by Juan Lichtenstein (Brazil)

12. Soy proteins in meat products, prepared by Juan Lichtenstein, J. Zilio (Brazil)

13. Discussion paper, prepared by Michael Schneider (Switzerland/Venezuela)

14. Discussion paper, prepared by N.W. Tape (Canada)

15. Discussion paper, prepared by Jozef Toczek (Poland)

16. Production, processing and marketing of some oil-seeds in an integrated agro-industrial enterprise, prepared by J. Turinski (Yugoslavia).